

# PATENT SPECIFICATION

(11) 1 280 436

1280 436

NO DRAWINGS

(21) Application No. 3952/71 (22) Filed 4 Feb. 1971

(45) Complete Specification published 5 July 1972

(51) International Classification A23L 1/18

(52) Index at acceptance

A2B 1B 1C

A2E 1 2

(72) Inventors TATSURO TANAKA and YOSHITAKA SATA



## (54) METHOD OF PRODUCING FRIED RICE FOR INSTANT COOKING

(71) We, NISSIN SHOKUHIN KAISHA LTD., a Corporation organised under the Laws of Japan of 1 of 13, Ohatacho, Takatsuki, Japan, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed to be particularly described in and by the following statement:—

This invention relates to a method of producing fried rice to be served as a meal by instant cooking.

The fried rice produced by prior art methods requires a long cooking time of over 15 minutes to achieve the same state as boiled rice, and the cooked fried rice produced from the prior art methods has a taste inferior to boiled rice.

By means of this invention, a fried rice has been produced which can be cooked in about 3 minutes and served as a meal. The rice produced by the present method has an excellent taste and is comparable in quality to boiled rice.

According to the present invention, there is provided a method of producing fried rice for instant cooking comprising gradually drying boiled rice by heating it with hot air the temperature of which is gradually increased from

86°F to 194°F until the water content of the rice is reduced to between 10—20% by weight, and dehydrating and swelling the rice by frying the dried rice for 10—20 seconds in oil heated to a temperature between 356°—428°F thereby producing a fried rice product.

More specifically, the starch of raw rice may be changed into  $\alpha$ -starch with sufficient swelling by boiling prior to the gradual drying step, and the said rice is dried by hot air in such a manner that the temperature is gradually increased from 86°F (30°C) to 194°F (90°C) to prevent cracking of the rice.

When the drying air temperature commences above 140°F (60°C), many of the particles of rice are apt to be cracked and broken.

As the water content of the dried rice affects the results of the frying step of the process the boiled rice must be dried to reduce the water content to 10—20% by weight in order to achieve the best results, as shown in the following table, wherein is recorded some experimental observations in respect to the swelling ratio, in terms of apparent specific gravity, and cooked state of the rice at various water contents of the dried rice:

30

35

40

45

50

55

Water content of dried rice % by weight	Apparent specific gravity of rice after frying treatment (1)	Appearance and taste of rice after cooking (2)
40	0.45	Surface is coloured brown in spots and the core of the rice is still hard to eat.
30	0.32	
20	0.18	Surface is cream in colour and there is enough swelling without either a hard core or an odd smell.
10	0.17	
7	0.26	Surface is brown in colour and the core is still hard to eat.

Note (1) Frying treatments are comprised of 15 seconds at 410°F (210°C.) Apparent specific gravity of raw rice is 0.80.

Note (2) Method of cooking is 3 minutes boiling of 120 gram of fried rice in 180 milli-litres of water.

5 In the frying treatment after the said gradual drying process, the dried rice having a 10—20% water content (based on the total weight of the rice) is fried for 10—20 seconds in oil or fat, e.g. made from plants or animals, at high temperatures of 356—428°F (180—220°C).

10 In the prior art processes, it has been attempted to produce instant rice by frying washed raw rice; however, this method suffers from a disadvantage in that rice produced by this method has an undesirable brown coloration and the swelling of the rice is very poor.

15 It has also been attempted by prior art processes, to produce instant rice by first boiling the rice and, without drying, to fry the rice for 3—5 minutes at 230—302°F (110—115°C). However, the rice produced by this method also has a brown coloration and is also not sufficiently swelled. As a result of the two processes described above, the instant cooking rice produced from these methods must be cooked for a considerable time, i.e. over 15 minutes in order to properly cook the rice and the taste and, of course, the colour is accordingly impaired.

The present invention overcomes the above-stated disadvantages of the prior art.

Some interesting results appear in the following table:—

Oil temperature °F(°C)	Apparent Specific Gravity	Water content in fried rice (%) by weight	Oil or fat content in fried rice (%) by weight
302(150)	0.54	8.32	8.2
320(160)	0.42	5.01	9.5
338(170)	0.35	3.83	12.3
356(180)	0.21	2.78	16.5
374(190)	0.20	2.07	18.2
392(200)	0.18	1.93	20.0
410(210)	0.18	1.75	22.3
428(220)	0.17	1.43	23.5

Note (1) Each frying treatment time is 15 seconds.  
Water content in dried rice is 15.3%.

The swelling of rice is not sufficient when the frying temperature is under 302°F (150°C), and the same results of insufficient swelling, with the drying of the surface part of the rice only, are obtained at 302°F (150°C) (frying temperature) and this was true even though the frying time was increased to 3—5 minutes. Note further that, as the frying temperature increased higher, the apparent specific gravity of the rice became lowered, which means swelling of the rice has increased. The water content in the fried rice becomes smaller by dehydration and the oil or fat content in the fried rice increases, which means that the finally produced instant cooking rice has an excellent taste and can be cooked in a relatively short time.

After the process and treatment according to the invention, fried rice is ready for instant cooking. When a unit quantity of 120 grams of the fried rice is boiled for 3 minutes with 180 milli-litres of water in a skillet or sauce pan, the resulting rice has an excellent taste, a glossy appearance and sufficient swelling without any hard core in the rice particles.

The method of this invention will be better understood from the following non-limitative examples.

#### EXAMPLE I.

2 kg of raw rice is washed and inserted in water, and is boiled for 20 minutes under a pressure of 3 kg/cm<sup>2</sup> in a pressure kettle. After the boiling under pressure, the boiled rice is dried gradually by a hot-air drying device in which the air temperature is gradually increased from 86°F (30°C) to 194°F (90°C), resulting in the production of 1.5 kg of dried rice with a water content of 15% based on the weight of the rice.

The dried rice is further fried for 15 seconds in a lard oil, heated at the temperature of 392°F (200°C), and 2.2 kg of fried rice with optimum dehydration and swelling is obtained for instant cooking. The fried rice for instant cooking has an apparent specific gravity of 0.2, a water content of 2.1% by weight and an oil or fat content of 21.3% by weight.

When a unit quantity of 120 grams of the fried rice for instant cooking is boiled for 3 minutes with 180 milli-litres of water, a boiled rice having excellent swelling characteristics without any hard core is ready to serve for a meal.

#### EXAMPLE II.

2 kg of raw rice is washed and inserted in water, and there is added 0.5% by weight of a glycerol/fatty acid ester to the raw rice. The rice is then boiled for 20 minutes under a pressure of 2 kg/cm<sup>2</sup> in a pressure kettle. After the boiling under pressure, the boiled rice is dried gradually by hot air of which the temperature is gradually increased from 86°F (30°C) to 194°F (90°C). 2.0 kg of dried rice with a 12.8% by weight water content is obtained. The dried rice is, further, fried for 10 seconds in a beef oil heated at 410°F (210°C). 2.4 kg of fried rice is thus obtained, which has excellent dehydration and swelling characteristics and may be utilized for instant cooking.

The fried rice, obtained in the above procedure, has an apparent specific gravity of 0.18, a water content of 1.8% by weight, and an oil or fat content of 24.3% by weight. When the fried rice for instant cooking is cooked in the same way explained in the above-mentioned Example I, a boiled rice having sufficient swelling without any hard core is ready to serve for a meal.

#### WHAT WE CLAIM IS:—

1. A method of producing fried rice for instant cooking comprising gradually drying boiled rice by heating it with hot air the temperature of which is gradually increased from 86°F to 194°F until the water content of the rice is reduced to between 10—20% by weight, and dehydrating and swelling the rice by frying the dried rice for 10—20 seconds in oil heated to a temperature between 356°—428°F thereby producing a fried rice product.

2. A method according to claim 1, wherein the rice is initially boiled for 20 minutes before the gradual drying step.

3. A method according to claim 2, wherein the rice is initially boiled under a pressure of 2Kg/cm<sup>2</sup>.

4. A method according to claim 2, wherein the rice is initially boiled under a pressure of 3Kg/cm<sup>2</sup>.

5. A method of producing fried rice substantially as described herein.

For the Applicants:—

LLOYD WISE, BOULY & HAIG,  
Chartered Patent Agents,  
Norman House, 105—109 Strand,  
London, WC2R 0AE.